Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date	3/16/2011
State:	PA
County:	Susquehanna
API Number:	37-115-20377
Operator Name:	Chief Oil & Gas
Well Name and Number:	Kerr Unit 3
Longitude:	-75.840083
Latitude:	41.697639
Long/Lat Projection:	NAD83
Production Type:	Gas
True Vertical Depth (TVD):	7,630
Total Water Volume (gal)*:	729,708

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
(FRW-66)	Halliburton	Friction Reducer	Hydrotreated Light Distillate	64742-47-8	10.0 - 30.0%	0.06600%	
(BE-9M)	Halliburton	Biocide	Tributyl tetradecyl phophonium chloride	81741-28-8	5.0 - 10.0%	0.01300%	
			Methanol	67-56-1	10.0 - 30.0%		
(LP-65)	Halliburton	Scale Inhibitor	Ammonium Chloride	12125-02-9	5.0 - 10.0%	0.05300%	
(CS-650 OS)	Halliburton	Oxygen Scavengar	Ammonium Bisulfite	10192-30-0	35.0 - 60.0%	0.01200%	
			Nickel Chelate Catalyst	n/a	< 2.0%		
Sand (Proppant)	Halliburton	Propping Agent	Crystalline Silica	14808-60-7	99.90000%	13.51000%	
Water	Provided By Customer	Base Fluid	Fresh Water		100.00000%	86.35000%	

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

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